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receiving position information by an information terminal from a plurality of different kinds of positioning systems, each positioning system having its own radio equipment and using corresponding radio waves to determine the position of the information terminal; and automatically changing from an unavailable one of the positioning systems to an available one of the positioning systems.

REMARKS

Claims 1-31 are pending in this application and stand rejected. Amendments to claims 1, 5, 6, 10, 11, 14, 15, 19, 20, 22, 24, 27 are presented above. Claims 32 and 33 are newly added in this response.

Rejections to the Claims:

The Invention

The present invention relates to determining the position of an information terminal. The information terminal may be located, for example, in a vehicle, or it may be handheld and carried by the user. The information terminal of the present invention receives radio waves from multiple positioning systems of different types. For example, the positioning systems may include the Global Positioning System (GPS), a differential GPS, radio equipment for a portable telephone, radio equipment for a Personal Handy-Phone System (PHS), and a radio marker. The information terminal uses the position information from the positioning system having the highest precision. If this positioning system is unavailable, then the information terminal automatically switches to the positioning system with the next highest precision, and so forth.

The References

Endo. Endo relates to a positioning system for a vehicle. The positioning system used in Endo is GPS. In Endo, when radio waves can be received from only one satellite in the GPS system, the current position of the vehicle is determined using navigational data received at the current time and navigational data received at an earlier time. See Endo, abstract and col. 2, lines 61-66.

Mansell et al. Mansell relates to monitoring the status of vehicles, detecting certain alarm conditions, and monitoring or tracking the location of vehicles. The vehicle tracking and security system of Mansell allows immediate responses to vehicle thefts, accidents, breakdowns, or other emergencies. A vehicle's location is determined using GPS information. See Mansell, abstract and col. 2, lines 6-10.

Hikuma et al. Hikuma relates to a cordless telephone apparatus that enables resumption of an interrupted telephone call over the same pair of transmit-receive radio channels established for the call. The interruption may be caused, for example, by the internal battery of the remote unit losing contact with the battery contacts when a user replaces a battery. The apparatus base unit outputs an out-of-range signal when the apparatus detects that the received field strength in the receiving channel is below a prescribed level. A call resumption control circuit detects the out-of-range signal. A backup power source enables a volatile memory area to maintain channel connection state data in the event of a power supply interruption. See Hikuma, abstract; col. 1, lines 8-16; and col. 6, lines 5-37.

35 U.S.C. § 102(b)

The Examiner rejects claims 1, 2, 10, and 11 under 35 U.S.C. § 102(b) as being anticipated by Endo et al. (U.S. Patent No. 4,731,613). Applicant respectfully traverses these rejections for the reasons presented below.

The Present Claimed Invention Distinguishes Over the Prior Art

Claim 1 of the present invention, as amended, recites “a plurality of different kinds of positioning systems, ... each positioning system having its own radio equipment and using corresponding radio waves ...” and “an information terminal automatically changing from any of said positioning systems in an unavailable state to an available one of said positioning systems ...”

Endo relates to a positioning system that detects the movement of a vehicle and determines the position of the vehicle using a built-in motion sensor and a single satellite when other satellites serving the GPS are unavailable. The only positioning system Endo discloses is the GPS. Endo does not disclose “a plurality of different kinds of positioning systems” and the ability to automatically select one positioning system when another positioning system is unavailable.))

In contrast, the information terminal of the present invention receives radio waves from multiple positioning systems of different types. As discussed above, exemplary positioning systems may include the Global Positioning System (GPS), a differential GPS, radio equipment for a portable telephone, radio equipment for a Personal Handy-Phone System (PHS), and a radio marker. The information terminal uses the position information from the positioning system having the highest precision, which is the GPS in this example. If the GPS is unavailable, then the information terminal automatically uses the positioning system with the next highest precision, which would be a portable telephone base station in this example, and so forth. Endo does not disclose these features.

Considering independent claim 10 of the present invention, claim 10, as amended, also recites “a plurality of different kinds of positioning systems, ... each positioning system having its own radio equipment and using corresponding radio waves ...” and “automatically changing from any of the positioning systems in an unavailable state to an available one of the positioning systems ...” Thus, for at least the reasons presented above with respect to claim 1, it is submitted claim 10 patentably distinguishes over the prior art.

35 U.S.C. § 103(a)

The Examiner rejects claims 3, 4, 6-13, and 15-27 under 35 U.S.C. § 103(a) as being unpatentable over Endo in view of Mansell et al. (U.S. Patent No. 5,223,844). The Examiner also rejects claims 5, 14, and 28-31 under 35 U.S.C. § 103(a) as being unpatentable over Mansell in view of Hikuma et al. (U.S. Patent No. 5,426,690). Applicant respectfully traverses these rejections for the reasons presented below. Applicant also notes that claims 28-31 have been canceled.

The Present Claimed Invention Distinguishes Over the Prior Art

Independent claim 20, amended in a way similar to claims 1 and 10, recites “a plurality of different kinds of positioning systems, ... each positioning system having its own radio equipment and using corresponding radio waves ...” and “automatically changing from any of the positioning systems in an unavailable state to an available one of the positioning systems.” Likewise, independent claim 24 recites “a plurality of different kinds of positioning systems, ... each positioning system having its own radio equipment and using corresponding radio waves ...” and “automatically changing from any of the positioning systems in an unavailable state to an available one of the positioning systems.”

As discussed above, Endo does not disclose the acquisition of position information from a plurality of different kinds of positioning systems, each system sending radio waves corresponding to the particular positioning system, and the ability to automatically select one positioning system when another positioning system is unavailable. Endo only uses GPS position information. Likewise, Mansell only uses GPS position information. Although Mansell discloses that mobile units within the vehicles have cellular telephone transmitters, the use of the cellular telephones appears to merely be for the vehicle occupants to contact a control center, not to receive position information. Also, Mansell does not provide the ability

to automatically select one of a plurality of positioning systems to receive position information from when another positioning system is unavailable.

As for the dependent claims, claims 2-9 depend from claim 1, claims 11-19 depend from claim 10, claims 21-23 depend from claim 20, and claims 25-27 depend from claim 24. The dependent claims include all the limitations of their respective independent claims, plus additional limitations that are not taught or suggested by the prior art.

For example, claim 5 recites that "when the holder of said information terminal has not moved from an identical site for a predetermined time period, an alarm is raised upon a judgment that an unusual situation has occurred to the holder." On page 6 of the Office Action, the Examiner states that Endo, as modified by Mansell, fails to specifically disclose the limitation of transmitting a notifying signal when a position is out of range, but that Hikuma discloses a radio telephone system wherein an alarm is sent to the user when the user moves outside the operational area of a portable telephone unit. The Examiner then asserts that it would have been obvious to combine the references so that an out-of-range unit can restore normal communication.

However, none of the cited references discloses raising an alarm when a user has remained in one position for a predetermined time period. The present invention encompasses the situation in which a user remains in one position for a predetermined period of time. In contrast, Hikuma deals with the situation in which a user moves outside the operation area of a portable telephone unit. Thus, Hikuma does not contemplate providing notification when a user remains in one position for a predetermined period of time.

Therefore, for at least this reason and the reasons set forth above with respect to the independent claims, it is submitted that the dependent claims patentably distinguish over the prior art.

Therefore, Applicants submit that claims 1-27 patentably distinguish over the prior art. Accordingly, Applicants respectfully request reconsideration and withdrawal of the rejections under §§ 102 and 103.

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CONCLUSION

In accordance with the foregoing, it is respectfully submitted that all outstanding rejections have been overcome and/or rendered moot, and further, that all pending claims patentably distinguish over the prior art. Thus, there being no further outstanding rejections, the application is submitted to be in condition for allowance, which action is earnestly solicited.

If there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.

If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 19-3935.

Respectfully submitted,

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